

WHAT IS CLAIMED IS:

1. A personal care composition comprising an effective amount of a repeat sequence protein polymer and a physiologically acceptable carrier or excipient.

2. The composition of claim 1, wherein the repeat sequence protein polymer comprises a repeating amino acid sequence unit derived from elastin, collagen, abductin, byssus, flagelliform silk, dragline silk, gluten high molecular weight subunit, titin, fibronectin, leminin, gliadin, glue polypeptide, ice nucleating protein, keratin, mucin, RNA polymerase II, resalin or a mixture thereof.

3. The composition of claim 1, wherein the repeat sequence protein polymer formula comprises:

$$T_y[(A_n)_x(B)_b(A'_n)_{x'}(B')_{b'}(A''_n)_{x''}]_i T_{y'}$$

wherein:

T and T' each comprise an amino acid sequence of from about 1 to about 100 amino acids, wherein the amino acid sequence of T' is the same as or different from the amino acid sequence of T;

y and y' are each an integer from 0 to 1, wherein the integer of y' is the same as or different from the integer of y;

A, A' and A'' are each individual repeating sequence units comprising from about 3 to about 30 amino acids, wherein the amino acid sequence of A' and the amino acid sequence of A'' are the same as or different from the amino acid sequence of A;

n, n', and n'' are integers of at least 2 and not more than 250;

x, x' and x'' are each 0 or an integer of at least 1, wherein each integer varies to provide for at least 30 amino acids in the A', A' and A'' individual repeating sequence units, and wherein the integer of x' and the integer of x'' are the same as or different from the integer of x;

B and B' each comprise an amino acid sequence of from about 4 to about 50 amino acids, wherein the amino sequence of B' is the same as or different from the amino acid sequence of B;

b and b' are each an integer from 0 to 3, wherein the integer of b' is the same as or different from the integer of b;

i is an integer from 1 to 100.

4. The composition of claim 3, wherein T and T' comprise an amino acid sequence from about 1 to about 60 amino acids

5. The composition of claim 3, wherein T and T' comprise an amino acid sequence with fewer than 20% of the total number of amino acids in the repeat sequence protein polymer.

6. The composition of claim 3, wherein B comprises an amino acid sequence with a biological or chemical function or activity.

7. The composition of claim 3, wherein B' comprises an amino acid sequence with a biological or chemical function or activity.

8. The composition of claim 3, wherein i is an integer from 1 to 50.

9. The composition of claim 3, wherein i is an integer from 1 to about 30.

10. The composition of claim 3, wherein A, A', and A" comprise SEQ ID NO. 1, SEQ ID NO. 3, SEQ ID NO. 4, SEQ ID NO. 5, SEQ ID NO. 6, SEQ ID NO. 7, SEQ ID NO. 8, SEQ ID NO. 9, SEQ ID NO. 10, SEQ ID NO. 11, SEQ ID NO. 12, SEQ ID NO. 13, SEQ ID NO. 14, SEQ ID NO. 15, SEQ ID NO. 16, SEQ ID NO. 17, SEQ ID NO. 18, SEQ ID NO. 20 or a combination thereof.

11. The composition of claim 3, wherein A, A', and A" comprise SEQ ID NO. 1, SEQ ID NO. 3 or a combination thereof.

12. The composition of claim 1, wherein the repeat sequence protein polymer comprises from about 0.001 weight % to about 10 weight % of the composition.

13. The composition of claim 1, wherein the repeat sequence protein polymer comprises from about 0.01 weight % to about 5 weight % of the composition.

14. The composition of claim 1, wherein the repeat sequence protein polymer comprises from about 0.01 weight % to about 1 weight % of the composition.

15. The composition of claim 1, wherein the repeat sequence protein polymer comprises SEQ ID NO. 19.

16. The composition of claim 1, wherein the personal care composition comprises a hair care composition, a skin care composition, a nail care composition, a cosmetic composition, an oral care composition, or an over-the-counter pharmaceutical composition .

17. The composition of claim 16, wherein the personal care composition is a hair care composition selected from t shampoo, conditioner, anti-dandruff treatment, styling aids, styling conditioner, hair repair or treatment serum, lotion, cream, pomade, and chemical treatments.

18. The composition of claim 16, wherein the personal care composition is a skin care composition selected from moisturizing body wash, body wash, antimicrobial cleanser, skin protectant cream, body lotion, facial cream, moisturizing cream, facial cleansing emulsion, surfactant-based facial cleanser, facial exfoliating gel, anti-acne treatment, facial toner, exfoliating cream, facial mask, after shave balm and sunscreen.

19. The composition of claim 16, wherein the personal care composition is a skin care composition comprises topically applied over-the-counter drugs comprising anti-fungal treatments, anti-acne treatments, skin protectants, and antiperspirants.

20. The composition of claim 16, wherein the personal care composition is a cosmetic composition comprising a makeup composition.

21. The composition of claim 16, wherein the personal care composition is a cosmetic composition selected from eye gel, high-melting point lipstick, lipstick, lip gloss, lip balm, mascara, eyeliner, pressed powder formulation and foundation.

22. The composition of claim 16, wherein the personal care composition is a nail care composition selected from nail enamel, cuticle treatment, nail polish, nail treatment, and polish remover.

23. The composition of claim 16, wherein the personal care composition is an oral care composition selected from toothpaste, mouth rinse, breath freshener, and whitening treatment

24. The composition of claim 17, wherein the hair composition is a shampoo selected from conditioning shampoo and anti-dandruff shampoo.

25. The composition of claim 17, wherein the hair care composition is a conditioner selected from leave-on hair conditioner, cream rinse and nourishing hair conditioner treatment.

26. The composition of claim 17, wherein the hair care composition is a chemical treatment selected from permanent waves, permanent and temporary relaxers, permanent hair dyes, semi-permanent hair dyes, and temporary hair dyes.

27. The composition of claim 18, wherein the skin care composition is a sunscreen selected from non-water-resistant sunscreen, very water-resistant sunscreen and water-in-silicone sunscreen.

28. The composition of claim 21, wherein the cosmetic composition is a mascara selected from non-waterproof mascara, waterproof mascara, volumizing mascara, lengthening mascara, curling mascara, anhydrous waterproof mascara, water-based mascara, and eyelash or eyebrow treatment.

29. The composition of claim 21, wherein the cosmetic composition is a pressed powder formulation selected from loose powder, blush, eye shadow, and bronzing powder.

30. The composition of claim 21, wherein the cosmetic composition is a foundation selected from water-in-oil foundation, water-in-silicone foundation, oil-in-water foundation, anhydrous makeup stick, and cream-to-powder foundation.

31. A personal care composition comprising an effective amount of a repeat sequence protein polymer with the balance of the composition comprising one or more compounds from the group of carriers, excipients, liposomes, active ingredients, biological or botanical products, humectants, emollients, surfactants, thickening agents, silicone components, organic sunscreens, preservatives, neutralizing agents, perfumes or pigments.

32. A process for making a personal care composition comprising combining an effective amount of a repeat sequence protein polymer with a physiologically acceptable carrier or excipient to obtain a personal care composition.

33. The process according to claim 32, further comprising combining a compound from the group of carriers, excipients, liposomes, active ingredients, humectants, emollients, surfactants, thickening agents, silicone components, organic sunscreens, preservatives, neutralizing agents, perfumes or pigments to the composition.